

with Home Computing Weekly

20-26 February 1986

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Vol 5 No 8

Sinclair plans for CP/M

SIR Clive Sinclair appears to have finally turned his back on microdrives, Sinclair Research's own controversial data storage system.

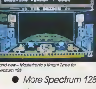
He confirmed at the launch of the Spectrum 128 last week (see *Popular Computing Weekly*, February 13, and inside story) that Sinclair Research was actively planning to introduce a disc drive for the Spectrum 128. This would open up the possibility of implementing CP/M with the machine, as Amstrad has already done with its CPC and PCW machines, and Commodore with the introduction of the Z80 second processor in 128. When asked if the Spectrum-

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ATARI ST SERIES

Final instalment: graphics and sound see p20

THIS WEEK'S NEWS



Brand-new – Mastertronic's Knight Tyme for Spectrum 128

- More Spectrum 128 packages
- MUD – it's arrived at last
- Commodore reports more losses – $50m in the red . .
- . . . but Amstrad's profits grow and grow

SPECIAL FEATURE ISSUE: COMMUNICATIONS

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Vol 5 No 8

EDITORIAL

It is ironic that both Commodore and Amstrad have both announced so very different financial results at the same time – presenting diametrically opposite faces of the microcomputer industry

At a time when Commodore continues to record losses and the question marks remain over the future of the American company, when Sinclair is still relying on its agreements with its creditors and bankers, when Acorn has retreated from the home market to scientific and educational pockets Amstrad continues to confound the popular notion that the small computer industry either is in a steep decline, or 'died' at some point during 1985

It is worthwhile to note ... that much of Amstrad's dramatically increased profits appear to be due to a machine that breaks no new ground technologically, but is priced attractively and packaged exactly right the PCW 8256, of course

Worthwhile, because Commodore has two potential contributors to a turnaround in its fortunes – the Amiga and the C128 and 128D, although the last is only available in Europe The Amiga is technologically ground-breaking to the hilt, but its price while realistic is not astonishing in the Amstrad sense of the word and the packaging, in Europe at any rate, has still to be decided. The 128s on the other hand, or, at least, the disc version, offer far more of the mix of proven technology comprehensive packaging and affordable pricing

Sinclair has certainly heeded the Amstrad success story Indeed Bill Jeffrey, Sinclair's chief executive, said at the Spectrum 128 launch that he was impressed by Amstrad's performance on the strength of CP/M The Spectrum 128 should shortly have a disc drive to go with it, and with that all the potential to implement CP/M. It is relying on its compatibility and familiarity to help Sinclair return to profitability Any 'quantum leap', whether in the form of a 'no compromise portable or a radical new machine with a nodding reference to the QL, will not now appear until profitability has been restored

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Computer Trade Association Magazine of the Year

Amstrad's profits soar – thanks to PCW 8256

AMSTRAD continues its computing success with the announcement of astonishingly high profits for the six months up to December 31, 1985.

Pre-tax profits stand at £27 54m – nearly three times that of the previous six months. This figure is also £7m more than Amstrad's £20 2m profit for the whole of 1984-85.

The PCW 8256 accounted for 21% of the company's total sales during the six months, despite the fact that it was first available three months into the six month period.

Over half of Amstrad's turnover (which was £136 31m in the six months to December) comes from overseas. City predictions state that as much as 65% of turnover will come from abroad for the full year, and forecasts of profits of £50m are now being made for 1985-86.

Alan Sugar, Amstrad's chairman, has a 50 4% holding in Amstrad. The latest results mean that his paper fortune has gone up to £138m.

Sound of music at Spectrum 128 launch

OVER 30 software companies demonstrated software for the Spectrum 128 at last week's launch in London (see *Popular Computing Weekly*, February 13). And although very little of the software written specifically for the machine is now available, the 128 itself is – and should be in the shops now.

Two software titles definitely available are Ocean's *Neverending Story* and *Daley Thompson's Supertest* – these are bundled with the machine and included in its £178 99 price tag.

Most of the products shown at the launch were listed in the last week's *Popular computing Weekly*, but there have been some additions to the catalogue.

Ram Electronics is bringing out a Centronics interface and serial communications cable specifically for the 128, while XRI Systems plans to be the first to offer packages to take advantages of the 128's MIDI capabilities. Its Micon MIDI interface complete with step time and real time sequencer programs costs £99 95. It has also developed nine other musical packages for the 128 including a DX7 hardware expansion kit (£98 95), a real time multi-tracker (no price yet), DX7 voice editor (£24 95), Casio CZ voice editor (£22 95) and DX7 and Casio voice libraries (£24 95 and £12 95 respectively). XRI can be contacted at 10 Sunnybank Road, Sutton Coldfield, West Midlands (021-382 6048).

Also musically, HCCS has produced a voice editor for the 128, which can be used with the company's echo synthesizer and amplifier. HCSS is at 28 Hitchin Street, Biggleswade (0767 318844).

Sinclair plans for CP/M

◄ continued from page 1

compatible portable micro – known as Pandora – would also offer the CP/M operating system, Sir Clive replied, "Pandora could just be a CP/M machine." This implies that the portable will probably now contain a built-in disc drive, or drives, rather than the mooted built-in microdrives.

A company spokesman further commented that the support of microdrives for the Spectrum 128 would not be discontinued.

Sir Clive also said that the company is dedicated to Spectrum technology in the long term, despite market research predictions that the days of the 8-bit machine are numbered. "Spectrum technology will most certainly be around in 1987. We will have Pandora out later this year, and plans beyond that on the same line," he said.

However, despite the failure of the QL to sell to the mass market, Sir Clive said that Sinclair was not abandoning the development of 16 bit machines. "We will see that both 16-bit and 8-bit technology will run together."

Plans for a successor to the QL, based on the 68008 processor, but substituting disc drives for the built-in microdrives, are apparently still being pursued at Sinclair Research, but it is now unlikely that a new QL machine will be launched this year.

On the subject of Sinclair's financial position, Sir Clive said that the current agreement with creditors was due for review at the end of March. "There is no question that we cannot reach a satisfactory conclusion," he said. He added that Sinclair's total debt was now "quite low", and that the company had paid over half of the £15m debt off.

Sinclair Research hopes to have paid off all debts by the autumn, and to announce a profit for the year beginning April 1 1986. However, additional capital investment in the company would still be a bonus.

Commodore loses $50m over Christmas

COMMODORE has reported a quarterly financial loss for the fourth consecutive time with the announcement that the company's deficit for the three months up to December 31, 1985 was $53.2m (about £38m).

Its sales were marginally up on the corresponding period the previous year – $339.2m (£242m) as against $338.7m (£241m). Then, however, the company showed a $3m profit.

This time, pre-tax profits were $1.05m (£750,000), but the costs of closing both the Corby assembly plant and a semi-conductor plant in California accounted for $22m (£15m) of the loss.

Commodore still claims that it expects to reach a satisfactory agreement with its bankers, and is predicting an earnings recovery this year, having taken steps to reduce costs.

The company has now lost $92 4m (£66m) in the first six months of the current financial year, around four-fifths of the $114m (£80m) it lost for the whole of the previous year.

● Commodore UK has undergone some personnel changes – general manager Nick Bessey has moved to head up Commodore Electronics, and Chris Kaday, after just six months with the company, is now acting general manager.

Wallow in MUD – at last

BRITISH Telecom's much-delayed implementation of *MUD*, the multi-player adventure game, should finally be available next week.

"*MUD* is going out of beta test and going live on February 24th," said Trevor Havelock of BT's New Information Services division.

"We have set up a 'Mud line' where anyone who wants a Mudpack, which gives them their identity code and instructions, can ring up to order one."

The Mudpack which costs £20, includes three hours of playing time. After that the charge is £2 per hour.

The Mudline number for Mudpacks is 01-608 1173.

Alidin brings out oscilloscope

AN oscilloscope add-on has been developed for the Spectrum by Hampshire company Alidin.

The Alidin Scope package comprises a hardware module which plugs into the Spectrum's expansion port and software on tape or microdrive.

The module has three signal input connectors, the TV screen displays the continuously updated waveform, while the keyboard takes the place of the knobs and dials usually found on an oscilloscope

The hardware costs £49 95, the software £24 95 Details from Alidin, 39 Kingsclere Road, Overton, Hampshire (0256 770488)

QL Comms cut

TANDATA'S communications package for the Sinclair QL, QL Comms, has been reduced in price by £80 The three modules Q-Connect, Q-Mod and Q-Call, will now sell for £129 95, as a single pack.

Tandata can be contacted at Albert Road North, Malvern, Worcs (06845 68421)

Commodore announces new holiday promotion

MORE promotional packages for the Commodore 64 and 128 have been announced by Commodore UK, with a chance this time of gaining a discount on your summer holiday This new offer follows on from a similar holiday offer Commodore ran last year

Each package containing either the 64 128 1570 or 1541 disc drives or any Commodore monitor will contain five £50 vouchers, which can be redeemed against the price of a selection of package holidays However some tour operators may not take all five of the vouchers for a single holiday

Commodore is continuing to sell the 64 as a compendium for £199 99, but the word 'Christmas' has been dropped and a new box designed.

The voucher offer is available from all Commodore outlets and vouchers can be used up to October 1987

Teletext adaptor

VOLEX Electonics has brought out a teletext adaptor for the Spectrum The unit gives the user access to all teletext broadcasts in the UK, and a telesoftware downloading facility

The package comprises the adaptor unit, Prom-based software, and a separate power supply unit.

It is available now and costs £99 92 from Volex at Lissadel Street, Salford M6 6AP

Three for the Spectrum 128

Domark enlarges the screen

THE Spectrum 128 Eureka monitor's most distinctive feature is that it displays programs without the black border around the display, so that games screens fill the whole of the screen

However, it also features a sound booster to amplify sound before putting it out through the monitor, and the monitor itself powers the computer through the edge connector, so that one less plug is needed It can also switch between a medium resolution colour screen to a green screen facility

The Eureka monitor will be available from Domark next month. A price has not yet been fixed but Domark hopes it will be under £250, and also plans versions compatible with Commodore, Acorn and Atari machines.

Saga chops Elite

SAGA Systems is to reduce the price of its top-of-the-range Saga 3 Elite keyboard for the Spectrum. Originally brought out at £78 28 last autumn, the Elite now costs £69 95

Saga is also claiming full compatibility with the new Spectrum 128 for all its Spectrum keyboards the Emperor, Plus, and Elite

Further details from Saga Systems, 2 Eve Road, Woking, Surrey (04862 22977)

Spectrum acquires more mice

NIDD Valley, whose Slomo game speed controller attracted much attention last year, will be producing two mice for the Spectrum range – including the 128.

The Digimouse provides digital pulse output, and two interfaces will be available for it – one a low cost, basic facility interface, the other designed for the more professional user, with a centronics interface and direct interfacing to Nidd Valley's programmable keypad.

The second pointer, the Anamouse, uses analogue input, and is designed for the serious user, with three independently programmable buttons and Z axis control

The Digimouse and Anamouse devices each cost £34 95, Digimouse's low-cost interface £14 95, the professional interface £34.95 and the Anamouse interface £14 95

Details from Nidd Valley at Stepping Stones House, Thistle Hill, Knaresborough, N Yorks (0423) 864488)

Letters

QL Values

I write in reply to Ziggurat (Vol 5 No 6) and David Kelly's apparent total lack of knowledge concerning the QL and other MC68000 machines. Graphics handling on the QL is incredibly simple. Over 40 display routines are included as part of the QDOS operating system (which are called by SuperBasic instructions) and as such are available directly to assembly language. Also the amount of memory required to hold the display is 32K, exactly the same as for the Atari ST Series.

The QL is far from slow. The basic benchmarks for the machine only cover extremely small programs which tend to be efficient in most micros. However, for larger, more useful programs, the QL is the only micro not to slow down to a snail's pace but instead run at full speed due to intelligent variable handling techniques.

David Kelly implies that the QL is not particularly strong or pleasant to use, in the field of programming. Why then does the machine possess arguably the best and most structured basic of any home micro? Also which other home micro can boast a supply of 100% industry standard versions of C, Pascal, BCPL, Lisp, Fortran 77 and other popular languages?

The QL has its faults: its sound is inferior to that of the Commodore 64 and it could do with an improved keyboard. 'Media values' do play a large part in the success of a computer in a very competitive and prestige conscious market, but the abundance of articles written about the QL by people with no experience of the machine give little chance of its real virtues becoming apparent.

D J Parrott
61 Warrington Road
Dagenham
Essex

David Kelly replies: The 'media values' now demanded of a new home are quite specific. 256 res multi-colour graphics which can be easily animated and sophisticated music handling are essential requirements and the QL just does not deliver.

Despite its 16-bit processor, structured Basic and fast mathematical manipulation, no quantum leap is observed where it matters — on-screen.

In media value terms, even the Spectrum 128 beats it hands down.

Values QL

I would like to add more to the letter in Vol 5 No 8, by LW Tomlin. I ordered my QL in February 1984 and took delivery in July of that year. I dare say that Sir Clive, being enthusiastic about his creation, did try to rush the product on to the market and it was not without its faults and drawbacks. But it is easy to be wise after the event.

I have at present the latest machine, which is a pleasure to use and extremely reliable. I have also purchased the latest business software that comes free with all new machines and find it hard to fault. On request, I was also sent the Manual and User Guide, now issued with all new QL's and find it to be extremely accurate, easy to follow and a very interesting experience for the beginner who has no knowledge of programming. What was wrong with the QL, is no longer true, the continuous development of peripheral manufacturers to design additional hardware etc, and Software houses to write programs for all types of operations should give the potential purchaser confidence that the QL is now a capable, reliable and deserving machine.

A B Nulty
14 Millfield Road
Bridlington
East Yorks



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Gandalf meets Aphrodite

Grahom Taylor enters the world of MicroGnome, the privately-run dotobase

Though bearded and jovial, Glyn Phillips lacks either a pointed hat or a green tunic. He is not a gnome. He is, however, now the sole controller/organiser/manipulator/censor and instigator of a remarkable independant database called MicroGnome. It is his voice that resides in the messages that appear at the bottom of the Gnome pages, his electronic will that sends casual gnome browsers into obscure and uncharted sections of the database.

MicroGnome is, if not unique in this country, certainly special – a privately run database with hundreds of pages and plenty of characters. It contrasts with the big name systems in much the same way as pirate radio stations do with Radio One. It offers a surprisingly wide range of features from a political comment board, to a role playing game, to technical tips, news and reviews and, inevitably, babble boards where addicts have strange conversations on everything from blowing Eproms to the meaning of *Stairway to Heaven*.

Glyn Phillips runs MicroGnome from two rooms in a house in north London. Although it is based around BBC Bs, the system is surprisingly complicated. Several BBC computers are linked on an Econet system, some of which are used by Glyn to actually interact with and alter the system, while others have monitoring functions. Chugging away on the ground floor is an SJ Research file server attached to two twin disc drives which form most of MicroGnome itself.

Home of the Gnome
MicroGnome
Hehehe
1 Latest Gnews
2 Communicado
3 Beebomania
4 Gnome Diary
5 Underware
6 Goblin Party
7 Write to Gnomey
8 Goblination
9 Babble Board
+ Our Address

Certain automatic functions are handled by AutoGnome, which is yet another BBC B, running a massive Basic program which handles functions like the amount of time everybody gets on the system and frequently issues a series of nagging messages telling recalcitrant users in ever less polite tones to get off the system.

Time is carefully limited on MicroGnome because Glyn only has two telephone lines into the system, ie, only two people may be gnoming at the same time. "British Telecom is supposed to be putting in five more lines but it's been two more weeks for several months now," explained Glyn.

Despite the fact that many of those who try to contact MicroGnome will get an engaged tone, the signs are that the system is fairly popular – it gets around 800 calls a week spread through most of the day (things do tend to calm down between 2am and 10am when even database users need to sleep).

The Diagram

However, it is only very recently that Glyn has decided to start charging for the system. For £1.50 a month, you get a password that lets you on to parts of the system excluded to others and for 50p(!) you can rent your own frame, editing it to your own satisfaction. Buy several pages and you can build up your own mini-database under the pointed hat of MicroGnome itself.

The plea for subscriptions is only being moderately successful (18 at the last count) and the future of the whole Gnomic empire is in doubt. "I'm prepared to make no money on the system but unless I can get, say 50, subscriptions over three months the system will be closed down, mainly because I'll have to move house and I don't see me being able to set it up again elsewhere." Gnomes everywhere take note.

"I find it strange that people are prepared to spend a small fortune on telephone charges but won't pay a small subscription," Glyn added.

But where does MicroGnome come from? Why does anybody want to devote so much effort and expertise to losing money so that other people can have a good time?

The history of MicroGnome is complicated. It was begun by a group of people collectively known as Soft Machinery of which Glyn was a member. Under that banner, MicroGnome was inaugurated on February 7, 1985. It wasn't and isn't entirely altruistic.

MicroGnome is a sort of continuous demo of Glyn's work. What began as a commercial software package for the BBC from Communitel intended for people to get a 'feel' of developing and using databases has been slowly changed and adapted (soon to be adapted still further) into a very powerful system indeed. Glyn's work is the development and installation of private viewdata systems and MicroGnome is his portfolio.

"Probably the most difficult aspect of running any database is the routing – working out exactly what pages lead to and from one another. I have developed a system within MicroGnome that does that for you. If I insert a page under a certain heading, the program itself will automatically annotate all other relevant pages so that it becomes integrated into the system." Glyn illustrated the process with a short news piece concerning *Popular*'s visit to Gnome control – it was impressive to see the system whizzing through various pages adding details of the new news page throughout the system.

Whatever the various financial considerations involved in running a database like MicroGnome, there is one other factor to be taken into account – it's enormously good fun. Whenever anyone links with MicroGnome, they type in their name and then look through the system. At the same time in MicroGnome control a BBC monitor says something like, "Gandalf browsing," or, "Fred editing" if Fred is actually writing a message to the system. Over a couple of hours different names arrive, leave, write messages, browse all monitored by the system.

The system is not passive. If he wishes, Glyn can take control and send messages to a user which appear as 'blipverts' – short lines of text at the bottom of the screen. More than that he can shunt the hapless victim off the whatever section of the database he chooses. The megalomaniac possibilities are endless but it has to be said that Glyn is generally very restrained in his use of the facility. The most common reason is one of censorship. "I won't let just anything go onto the system – I don't necessarily mind swearing as such, since it's a

Gnome Communicado
MicroGnome
Rad Yer Ran Rod

First of all you need The Diagram – for this you must press +

When you've jotted down The Diagram read The Gnotes that follow – for these you must press + again.

+ More
Communicado 8 Later News 9 Index

question of context, but we do get people who just want to waste their time writing a stream of filth"

In a few cases, people have actually been bounced off the system as soon as they've tried to log on. "There's one guy who's an out and out racist of the most overt sort. I let him on for a while in the interests of freedom of speech and getting some reaction but he's got so over the top recently I bounce him off if I come across him."

Aside from racists, there is another strange phenomenon to be found among the babbleboards of MicroGnome. "A lot of the users pretend to be women," explained Glyn. "I think they do it to wind up other (almost exclusively male) users. Conversations develop between them where one side doesn't know that the other side isn't female – if things start getting too excessive I stop it."

The curious case of the the telephone transvestites brings us on to a general discussion of the curious character of MicroGnome users. What sort of people are they? Several of them are called Gandalf which is confusing, though Glyn says he can usually tell which Gandalf is which, Aphrodite is probably a guy in disguise and Richard Day is an ecology fan who does some nice designs. It's hard to say what these and the other users have in common. They tend to be adolescents though with interests in wargames, science fiction, music and computers. Many have BBCs, some have Spectrums (you can always tell them because of the dodgy punctuation, according to Glyn) and not a few have QLs or are using a system at work clandestinely.

Glyn has some other observations. "You get some people who come in to the system, and spend hours on some elaborate design of their name using multi-coloured graphics – those are the ones I never see again, mainly because they get their horrific phone bills and are put off forever." On the Babble Boards, surprisingly, serious conversations develop between people who have never met. "The anonymity helps, I think.

"I must say it'd be nice if more women did use the system, I think we get a lot of people with very similar interests at the moment, and persuading more women to use MicroGnome would be one way of opening up the range of subjects discussed." That said, the current crop of MicroGnome features is fairly diverse even if the most popular ones are the same on databases all over the country.


Glyn Phillips

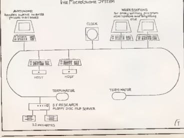
"The most popular features are the bulletin boards which function like loads of message slots." Several popular sections are run by other people who have pages of MicroGnome all to themselves. One of these is a role playing game run by Thanatos (not his real name, methinks). "The idea is to amass points and it involves working as a team with other players, but I don't really understand it," admitted Glyn. I couldn't understand it either but any role game that features spells entitled, "Oh, there it is!" or "Oh, go away!" is all right in my book.

Another key section is the technoboard where Glyn or other users try to answer questions placed there by desperate computer owners – (see the illustration on page 9 for the extraordinarily detailed answer to one question).

Added to that is news (MicroGnome had coverage of the BBC Master series before anyone else when pages of technical details were sent to the system 'live' from the launch actually using a Master BBC), a special Political Babble Board, and, of course, telesoftware.

And there is more, but not enough space, alas, to begin to come to grips with the mysterious Uncle Jim and the Gnome Rangers (a sort of ongoing send up of *Blue Peter*) and the strange story of "The Mystery of Batty Grange". Suffice to say that MicroGnome does more or less everything the 'real' databases do, with a good deal more spirit and humour, it currently fills over one and a half megabytes of disc space and could fill more, if people wanted it and BT finally manages to put in Glyn's telephone lines.

If you have a modem give it a try and, if you like it, don't forget to take out a subscription.



Package

Program *Costa Capers* **Micro** Spectrum **Price** £7 95 **Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL

Welcome to Wish You Were On Holiday 86 This week we've asked Ted Blewitt to go on holiday in Spain.

Ted's holiday started well with an unusual loading sequence, the instructions appearing screen by screen as the tape prepared for warmer climes. Suitably Hispanic music played once the plane — sorry, micro was loaded, but Ted's problems began.

"It seemed my luggage had gone astray In fact it had a life of its own and I had to run all over the place getting it back. I've had to buy most things again, and being short of cash I needed a credit card first"

Ted obviously isn't alone in facing these problems Some adventurers who went to *Terrormolinos* faced exactly the same plot last year! But of course these tests are physical as well as the mental, as anybody who's worked as a Technician like Ted will know. Changing things in one screen may alter things in another, and some objects can't be obtained until other tasks have been completed.

Luckily Ted had good weather – almost too good, in fact, as he was forced to consume cans of lager to ward of dehydration and give him Dutch courage to complete certain otherwise impossible feats And as day turned to night, Ted's holiday flew by and the 10th of August completion date approached.

Not much of a rest for Ted then and definitely hard work, but we can't help thinking a holiday isn't for everyone It's best suited to those who want something similar every year and don't mind persisting with a tried and true formula.

For ourselves we thought it rather too much like work in the Chip Factory and that it Costa bit too much

John Minson

Strategy

Program *Ultima IV, Quest of the Avatar* **Micro** CBM64/Atari + Disc Drive **Price** £66 00 approx **Supplier** Origin System, 340 Harvey Rd, Manchester N.H. 03103 USA (Import)

I must admit, even though I am very keen on adventures, I have never had any leaning towards Role Playing Games, until now *Ultima IV* is without a shadow of doubt the ultimate RP strategy game Never has a game held my attention like this one does it is a masterpiece of programming

On first 'booting' the disc you are shown various options, such as Create new character, Journey onwards (from previous play) etc Your character is determined by answering questions put to you by an old gypsy and the computer then decides which one of the eight characters you are most suited to be. The players range from Bards and Magis, to Paladins and Tinkers, all possessing different personalities and fighting ability

Your quest is to learn the true qualities of life, ie, Honesty, Compassion, Valour, Justice, etc, this can only be done by exploring the 'Land of Brittania' and by interaction with people you will meet

Weapons, armour and food can also be purchased from these towns, along with magical potions and other necessary items. All kind of strange beings will try to put an end to your exploits Two-headed Ettins will throw boulders at you, rogues will rob you and don't make camp for the night in some strange forest

Ultima IV comes complete with a large map of Brittania plus two thick books, informing you all about the world and its inhabitants I think the price will put off a lot of possible buyers, however, in saying that, if you only buy one game this year, make it this one

Roger Garrett

Two timer

Program *Brian/Survival* **Micro** Spectrum **Price** £2 99 **Supplier** Central Solutions, 500 Chesham House, 150 Regent St, London W1R 5FA

This is a release from a new budget software house Central Solution and offers a couple of *Quill*ed adventures on one cassette

The first, *Brian the Bold*, is set in the time of knights and damsels in distress and is the familiar tale of peasant boy given opportunity to rescue King's daughter and become hero

The second game, *Survival*, places you in the role of new MI5 agent, Gary Gullible (surely they could have thought of a better name?) who has to recover the standard set of stolen documents you know the ones they are stolen in so many other adventures that they must be a bit tatty by now!

These adventures follow a mainly linear pattern – solve problem, continue on to next location, etc, and are fairly lacking in atmosphere and descriptive detail.

The puzzles are not so much brain teasing but more vocabulary lacking and there's nothing more annoying than knowing the solution to a puzzle only to be thwarted by choosing the wrong wording

There are some graphics in the games making use of Gilsoft's *Illustrator*, but are rather crude and unnecessary. There's no doubt that there are many better examples of *Quill*ed adventures to be found, but at £2 99 I suppose these are just about worth a look.

Andy Moss

Disc edit

Program *The Knife* **Micro:** Any Amstrad CP/M **Price** £12 95 **Supplier** Hisoft 180 High Street North, Dunstable, Beds LU6 1AT

The *Knife* is a disc sector editor for Amstrad 3" discs and as such it is competing with a range of similar programs that have recently appeared While not extortionate Hisoft's offering is not the cheapest you could buy and, unlike some others, it does not offer other disc utilities in the same package, but it does have some features that make it attractive

First of all it is powerful, but friendly There are, in fact, two programs supplied that do two slightly different jobs and between them you should find the correct level of flexibility and ease of use to suit you The editing control you are given over the disc is the equal of any I have seen, it is extremely easy to get to the desired sectors, tracks and files to make your changes, and it includes special options such as string or byte-sequence searches

Secondly, since it runs under CP/M rather than Amsdos it will also work on the PCW 8256 computers, and is quite cheap for a program on this machine.

Thirdly, it comes supplied with the invariably excellent Hisoft documentation In this case you are given a full beginner's course on the way CP/M (and hence Amsdos) disc directories and formats work

I have in the past had hours of work saved by utilities such as this and really every serious user should have one 'just in case' While for absolute novices, I would probably recommend Pride's *Oddjob* for features such as menu driven Unerasing of files, anyone who wants more control over their discs would do well to try *The Knife*.

Tony Rendle

First words

Program *Wordplay* **Micro** BBC B **Price** £12.95 **Supplier** BBC Soft, 35 Marylebone High Street, London W1M 4AA

The single most useful piece of software for any micro is a wordprocessor. It makes sense therefore for children to learn about them as soon as possible. *Wordplay* is intended to make this fun.

You write on a screen where each function key calls upon an animated animal character to work on the text. Each has a rhyming mnemonic to help you remember what it does. If you call for Elephant Eve to justify your text, for example, she walks up the page and tugs each line until it fits from edge to edge.

Storing the text is simplified to avoid confusions and there is even a spelling checker. Text is printed out (an adult section allows an expert to adapt the program to suit most printers) in large print on an A4 page. The idea is to offer a fun way to learn all about wordprocessing.

Sadly it fails. It ends up as a complicated wordprocessor where the "whistles and bells" just add to confusion and time-wasting rather than helping, and in the tape version loading is painfully slow. Most wicked of all it requires Basic 2 and does not say so anywhere on the packaging or in the otherwise comprehensive booklet. It is obviously aimed at schools where many BBC micros were bought with Basic 1 and have not been updated. That means they cannot save or load texts, use the spelling-checker or even succeed in changing the display colours!

Good idea, bad implementation. Not recommended.

Dave Watterson

Head case

Program *Groovy Garden* **Micro** Commodore 64 **Price** £1.99 **Supplier** Central Solutions, 500 Chesham House, 150 Regent St, London W1R 5FD.

If software has taken huge leaps forward in the last two years, then with this game it takes giant steps backwards.

Mastertronic and Firebird have shown that there is quality software in budget games, it's just a question of selection. If Central Solutions want to be taken seriously, they have to do a lot better than this rank awful game. The plot, what there is of it concerns you as a gardener protecting your four pigmy pines from an assortment of nasties ranging from bugs to empty dustbins, which you can despatch with your spray gun.

The game is, would you believe, a direct clone of *Space Invaders* and has ten screens which get progressively more boring as the game goes on. The only saving grace is the use of colour which is bright and attractive. Your pneumatic spray gun can be replenished by a visit to the garden shed where Mr Potty is busy with his mower, and then you...

Stop! I can't take any more of this torture. Let me return to sanity and load up something else.

Andy Moss

Serious stuff

Program *Pro-Fortran-77* **Micro** QL **Price** £99.95 **Supplier** Prospero Software, 190 Castelnau, London SW13 9DH

Prospero Software's stand looked a bit out of place at this year's first ZX Microfair. While the visiting hordes sorted through countless games and varied peripherals, Prospero was promoting its QL Fortran-77 package and – after talking with the company's spokesman – I couldn't escape the feeling that they saw serious Sinclair users as an endangered species.

For QL owners who are interested in heavy duty number-crunching (and there must be some out there somewhere), Prospero's package offers the first full QL implementation of the ANSI X3.9-1978 standard for Fortran (TDI's QL Fortran-77 is a near sub-set) with some useful added features. For example, there is an *include* statement for calling upon commonly used or user-designed files of program sequences during compiling and the ability to use hexadecimal constants where ever an integer constant is allowed.

The (Sinclair approved) package comes on three microdrives and one Eprom cartridge. The microdrives may be easily duplicated or (with some added effort) transferred to disc and contain the run-time library (GST) linker, compile-time error set and Fortran compiler programs. Also included are programs for adopting default devices and stack sizes to user requirements. The cartridge contains a "resident library" of machine-coded Fortran routines essential to most programs and is capable of multi-tasking operations. *Call* statements may be used to invoke sub-routines written in assembly language to make up for any shortfalls in Fortran's capabilities to meet a user's particular requirements from program to program. The new GST macro assembler sold by Sinclair is apparently quite suitable.

While I haven't had a chance to try any large programs yet, Pro-Fortran-77 works very efficiently with smaller test runs and looks to be an excellent product for those wishing to put this admittedly specialist language on their QLs. If there is any obvious drawback, it's that the package requires at least 80k of Ram and the user is not going to be able to do much without an expanded QL. But, if the ZX Microfair is anything to go by, there will be a minority appeal in any event. Within this market, however, *Pro-Fortran-77* demands some serious consideration.

Brian Beckett

Swing bat

Program *Hardball* **Micro** Commodore 64 **Price** £9.95 **Supplier** US Gold, Unit 10, Parkway Industrial Estate, Heneage Street, Birmingham.

So here's the rub – Baseball, that good clean all-American game actually evolved from English Rounders in the late 1800's and after weaning us Brits on grid iron



football, we are now to be shown the merits of the sport that made Babe Ruth famous.

This game has graphics which have to be seen to be believed and animation, especially on the batting screen, the best I've seen on the 64. But, are good graphics enough? No sir. A potentially superb simulation is let down by a set of dire instructions which assume you are familiar with typical Baseball terms like 'stealing', 'bunting' and 'double play' which, I would have thought, your average Britisher wouldn't have a clue about.

The batting screen gives a realistic view from behind the pitchers mound and once your pitching choice has been selected watch him wind up and throw – it's a real treat. Once the batsman has hit the ball, the screen changes to the field and the ball is picked up by the nearest fielder and thrown back to a choice of the four bases. If there is a lot of action on screen, the ball comes back at a ridiculously slow speed which is a let down.

Hardball is the best simulation of the sport I've seen so far but having said that, there is still a need for improved presentation and explanation in order to appeal the potential fans this side of the pond.

Andy Moss

Yankee connection

Peter Worlock dials up some American databases

In Britain, communications is still very much the poor relation of computer-related activities. Although the last year has seen a steady development of interest among UK micro users, we're still lagging a long way behind our American counterparts.

The purpose of this article is not to make British communicators green with envy, nor to blow the trumpet for American enterprise. It is simply a look at what is available in the US, based on the idea that what happens now in America is likely to happen soon in Britain.

One of the main drawbacks to the spread of communications fever in this country is cost. Over and above the cost of the computer, modem and software, are the costs of using the telephone. Even at cheap rates, this can be a considerable expense as it's easy to lose track of time when you're exploring new regions of an on-line database, or chatting to other users.

In the US, however, local phone calls are free, and since it's possible to log on to the major databases through local terminals, the cost of US communications is much lower.

Furthermore, the US has considerably more in the way of things to do with your communications system. At the lowest level, just as in this country, are the private bulletin boards, often run by computer hobbyists and aimed at similar users. However, demand for these services in the US is so high that many of them have now started charging subscription rates to cut down on the number of users!

Commercial systems

Here the US really leads. Whereas Britain features one service – Prestel – the US has several, most of them bigger and arguably better.

The two best-known are The Source and Compuserve. Compuserve is the biggest with more than 250,000 subscribers. In addition to the usual features such as news, special interest groups and teleshopping, Compuserve has several multi-user games including the enormous *MegaWars III*, the CB simulator service which features 72 channels allowing hundreds of users to talk on-line, a complete encyclopaedia at your fingertips, and specialised services such as weather briefings and radar maps for light aircraft pilots.

A new feature allows science fiction fans to read chapters from as yet unreleased books. You can even dump them to your printer to reduce on-line charges.

The Source offers similar services, but in a more serious vein. Following these two come a host of more recent services. Some are news-based, such as Delphi and Dow Jones News Retrieval. One of the more interesting is American People/Link which has opened its pages to special interest groups: Apple groups etc, but APL has special sections for sports enthusiasts, aviators, and health fanatics.

One of the most interesting developments in US communications is the gradual move towards faster transmission speeds. In the UK most bulletin boards operate at 300 bits per second, while Prestel uses a 1200/75 system which means that the Prestel computer transmits at 1200 bits per second, but your computer talks back at only 75 baud – which makes features like the CB simulators and chatlines a little tedious.

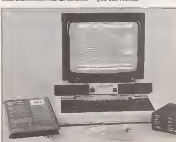
In America, however, many commercial systems are now offering full 1200/1200 rates, and an increasing number feature 2400/2400 facilities. Not only does this make interactive communication easier, it reduces costs since you can send and receive information eight times faster than with a 300/300 set-up. This allows you to make more use of one of the great features of US databases – the vast amount of very high quality, public-domain software which you can download to your own system for use later.

These superfast modems now cost as little as $500 (about £350) while capable 300/300 modems are down to around the £40 mark.

US subscription

UK users who think they might get their money's worth from any of these services have the possibility of subscribing and it might not cost as much as you think. The key to low-cost trans-Atlantic comms is called packet-switched networking. This will allow you to hook up to American databases for the cost of the call to your local PSS terminal. Charges after that are based on the amount of information transmitted (the number of packets) and on-line charges to the service itself. You can get into PSS by subscribing to services such as Telecom Gold, and subscriptions to something like Compuserve can be obtained in the normal way, either by sending a money order, or by using a credit card.

Details on Compuserve can be obtained from PO Box 20212, Columbus, Ohio, USA OH43220, and The Source from 1616 Anderson Road, McLean, Virginia USA VA22102.



Communications

Hardware *Skywave Multiport Interface/Skycom Rom/Voyager 7 Modem* **Micro** Any Amstrad CPC **Price** £160.95 all inclusive. The modem alone costs £91.95. The cheapest interface package is multiport + Prism 2000 modem £99.95. Other modems available. **Supplier** Modem House or Skywave.

This communication package for the Amstrad CPCs consists of Modem House's Voyager 7, connected via the RS232 port of Skywave Software's Multiport interface and controlled by Skycom software supplied in Rom form. Different combinations are possible – the interface can be bought individually if you already have a modem, and vice versa – so it is worth looking at the parts individually

A comms package can also be supplied for the PCW 8256 using the Voyager, but not the multiport.

There are much cheaper packages available if you are just interested in Micronet, Prestel or playing MUD Skycom is aimed at those who want something a little more ambitious or unusual from their micro and who know that the extra is worth paying for.



Voyager 7 plus interface

Voyager

The Voyager 7 is a reasonably sturdy, well built, modem All common permutations on 75/300/1200 baud rates are offered, including reverse Prestel, as well as a test mode which connects the input with the output to communicate with yourself It is mains powered and has a row of six LEDs along the front so that you know what is going on at any one time

It connects directly into a phone socket, using one of those weird Telecom plugs, so people with older phone systems may have problems It does, however, give you the potential advantages of auto dialling It is made special in this particular package by a small extra board that also gives you the facilities of auto-answering supported by the Skycom interface

The only real criticism is that the dial on the front, by which you select the different transmit and receive modes, is so confusingly labelled that they may as well not have bothered It is also not yet fully approved, a familiar story of red tape and backlogs.

For 95% of applications the modem will meet all your needs Certain American Bulletin Boards use 2400 baud rates which work better across the Atlantic than others, but it's a specialist thing and if you can afford those phone bills, you can afford a bigger modem.

Multiport

The Multiport interface is a well made, solid, three way port You are supplied with a standard RS232 D plug useable for all serial interfacing, printing, etc Software to redirect the print output from the standard parallel port to the RS232 is promised Something of a bonus, and perhaps unnecessary if you are just interested in communications, is a 24 way parallel port that is said to be 'quasi BBC User Port compatible' What this means is that for various chip reasons it is only possible to make the first 20 pins truly compatible It will no doubt make the connection of most BBC peripherals feasible, if not instantaneous, and Skywave does have plans for using it.

The final port is the obligatory through connector for disc drive or other peripherals Inside the multiport are two Rom sockets, but by the time the full Skycom software has been finished both will be used up The board fits snugly with the 464, but an extension has to be fitted if you have a 664 or 6128 It works well but looks a bit awkward.

The serial port can be set to transmit or receive baud rates between 9600 and 75, in a series of seven common combinations You can also set parity, duplex, stop bits, etc For most comms uses the appropriate combinations are available as menu options and you don't have to worry about setting them yourself

Skycom

The Rom software and manual supplied for this article were just provisional The first 'complete' version should be available in a few weeks but Skywave says that it will be producing upgrades and improvements

The existing package is nice, the equal of much that is around, with a Prestel mode, a Terminal mode (for bulletin boards with 80 column scrolling text) and a Telecom Gold mode Telesoftware downloading is supported.

Although it comes on Rom, you will need a support disc or tape file to hold the phone numbers for auto-dialling, etc The free memory is used as a buffer for holding characters that you have received, or wish to transmit. You can save the entire buffer, or individual Prestel pages, to disc, edit them, or even retransmit them.

However, more interesting than all this are all the extra features that are coming in the software upgrade, features that plug some gaps but are also likely to raise Skycom well above the more usual comms packages

We are promised an auto log on facility and more file transfer options for user to user communication There will be a format for connecting to the Open University computer and also something that is described as a 'simplified' IBM 3270 format You will be able to connect to a new 80 column viewdata system called Casper, which will apparently give you access to Yellow Pages amongst other things There will hopefully be a feature for downloading of CP/M software from Bulletin Boards

These must represent a tremendous attraction for some specialised or business users and should guarantee Skycom considerable sales

An auto answer system will also be included whereby people who dial will be shown a text file held on disc, as well as possibly being invited to enter a reply – a sort of text based answerphone or very simple Bulletin Board. A further Rom is also promised providing extensive software for running a proper Bulletin Board system from your own home, and Skywave promise that this, too, will contain some powerful features

Skywave is planning to set up a Bulletin Board in its own office, but they have already paid for their own page on Prestel (£25886) called Skyclub which gives information for all users of Skycom — a level of customer support that they are justifiably proud of.

Tony Kendle

Communications

David Wallin returns with a series on communications

This week sees the start of a new regular feature in *Popular* – on communications.

Following my Bulletin Board feature in the December 12 issue, I'm back, and I'll be giving you all the latest news about BBs, modems and all that kind of thing

Modems

There are probably many people who would like a modem and maybe have some Christmas money left.

There are now so many modems around that one is almost spoilt for choice The table below should help you work out which modem will do the job you want.

Key Type W – Hardwired modem A – Acoustic coupler
Speeds. D – Full duplex. If no D then half duplex.
Other symbols * – As standard on modem. O – Available at an extra cost.

The question of BABT approval on modems is an important one, and one that confuses many people Put simply, if a green sticker is not given to a modem or any other piece of telephone equipment, for that matter, then you should not fit the item to your phone lines You risk being disconnected if you do and you may damage your other phones If there is a green sticker, then all is well

The personal ratings in the table are obviously only a guide, and only you can decide which one would suit you. However, in my opinion the Demon modem



Graphics from Compunet by Bob Stevenson

is probably the best under £100 for any computer, except the BBC, where Le Modem is one of the best, as it comes with software on Rom

The VTX 5000 is good for a Spectrum owner to start (as indeed I did) If you can afford it, the WS 2000 is the best all round device

Modem features

Auto Dial

With a modem which has no Auto Dial, to phone a Bulletin Board or any modem service you have to use a telephone to dial and then listen for the carrier tone before proceeding (details in the Bulletin Board feature, *Popular Computing Weekly*, December 12) With an Auto Dial modem this is done automatically You just tell the computer the phone number and it will do the rest

Auto Answer

The modem and computer will 'listen' in on your phone line and if another modem dials your number it will answer the phone and upload/download data from the call modem (like a telex) or do whatever the software tells it to.

Auto Baud Rate Scan

When the modem receives some data it will analyse it and decide what baud rate the data is being sent at and then set itself to be compatible with the other modem. A Bulletin Board which works on more that one speed, eg, Basildon ITeC 1200/75 & 300/300, will use baud rate scanning to select the speed of your modem so it is compatible with your modem.

Ans/Orig

When two modems are communicating at the *same* speed, ie, 300/300 rather then 1300/75 particularly if in full duplex then it is better if one is set to *ans* (answer) and the other to *orig* (originate)

Hardwired/Acoustic

A hardwired modem plugs directly into a BT phone socket in a wall and then the phone will usually be plugged into the modem. An acoustic modem is different – the phone is plugged into the wall socket as usual

The modem is connected to the expansion/serial port on the micro as with any modem. The modem has two suction caps – one for the phone's mouthpiece and one for the phone's earpiece.

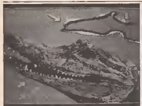
The earpiece of the phone is connected to its cap and so is the mouthpiece Thus forms a direct link for the sound to follow straight into the modem. Due to the shape of the caps some acoustic modems only work with the older round ended phones

The table is only a guide and the actual prices may differ by even up to £20 in more depending on the time of year and shop in which it is purchased. The features listed for each modem are believed to be correct at the time of press.

Model	Price	300/300	1300/75	12/12	Other	AD	AA	Supplier
Modem kit	£50	*						Maplin 0702-554155
Modem 1000	£50		*					Modem House 0392-69295
VTX 5000	£70	*		*				Modem House 0392-69295
Demon	£72	*	*	*	*	*	*	Walkbury Consultants 0733-235157
Minimodem	£75	*						Answercall 01-657 1133
Buzzbox	£80	*			*			De Com System 0606-678511
Le MODEM	£89	*	*	*	*	*	*	Watford Electronics 0923-37774
64 Multimodem	£99	*	*		*	*	*	Miracle Technology 0473-216141
Compunet modem	£100		*					Compunet 01-637 0942
TM 110	£114	E	*	E	E	E	E	Tandata 06845-68421
intermover	£115	*			*		*	Modular Tech 0689-253361
Nightingale	£137	*	*		*	E	E	Pace 0274-729306
Prospekt	£144	*	*	*	*			interlekt 0734-589551
Chip Chat	£149	*	*	*	*		*	Digisolve 0977-513141
WS2000	£149	*	*	*	*			Miracle Technology 0473-216141
Amstrad Modem	£175	*	*	*	*	*	*	KDS Electronics 04853-2078
KN300	£160	*						K&N Electronics 0628-22447
QL Comms	£220		*			*		Tandata 06845-68421



Note 12/12 denotes 1300/1300 baud; Other indicates more baud-rate and protocol options, E indicates option at extra cost.





Graphics by Hugh Riley (left) and Bob Stevenson (right), taken from Compunet

Speeds

Usually written as, for example, 1200/75, this indicates the receive/transmit speed of the modem in bits per second, or baud. There is another way of writing this speed: by a V number. V numbers refer to CCITT standards. If a modem complies to these standards then it can be advertised as, for example, V22 instead of 1200/1200 baud. I don't usually use V numbers because they require you to learn them and you can easily get them muddled up. However, for those who are not easily muddled, here is a chart showing what V numbers are what baud rates

CCITT V number	Baud rate
V21	300/300
V22	1200/1200
V22bis	2400/2400
V23	Viewdata Speed

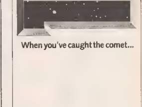
Viewdata speed is 1200/75 or 75/1200 (reverse viewdata) or both.

Another problem with writing the CCITT way is that it doesn't tell you if it is full or half duplex.

As you may have guessed, other similar numbers can refer to auto dial/answer, etc, but these are not so important and are not included.

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you.

Write to him at *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP





Seeing is believing

David Lawrence and Mark England conclude our series with a look at the ST's graphics and sound capabilities

The Graphics Display

At its simplest level, the monochrome display the ST divides its screen up into 640*400 pixels and records the state of each pixel in the form of a single bit within a 32K area at the top of memory, so that each 16 bit word in memory will represent 16 pixels on the screen

When we turn to the lower resolution modes of which the ST is capable, the situation becomes more complex because, one of the purposes of the lower resolution modes is also to allow the ST to define different "planes" on the screen so that it is almost as if either 2 or 4 different designs for the same screen display are being held in the memory at the same time

The reason for this is colour. While one "bit" in memory corresponds to one pixel on the screen there is clearly no possibility of distinguishing between pixels on the basis of colour – a pixel is either off or it is on. Of course that in itself gives two possible colours, according to what the foreground and background are defined to be in order to decide on more than two colours it is necessary to be able to record more than one item of information about each pixel In fact the ST allows, in its "multi-plane" modes, either four or 16 items of information to be stored about each pixel

In 2 plane mode, the data for each plane occupies half the full display memory and in 4 plane mode each plane occupies one quarter. In order to accomplish this, the size of the pixels used in defining the screen is increased so that in 2 plane mode, each pixel is twice the length vertically of a pixel in high resolution mode In 4 plane mode each pixel is twice the size of a high resolution pixel in both height and width. The result is that the screen can be covered in fewer pixels and less memory is required to remember which pixels are on or off.

To minimise the amount of scurrying around the memory which the ST has to do when creating a display composed of more than one plane, the information for the separate planes is interwoven so that the data for a particular screen position on one plane is next to the data for the same screen position on another plane

The Video Shift Register

It is all very well saying that the memory is arranged in this way or that to achieve the necessary 1,2 or 4 planes, but how is this data transformed into a display? Part of the answer is the work of the "video shift register" which can take display data from memory in the multi-plane modes and re-arrange it into colour information about individual pixels In this way, although there are fewer pixels, each one has more information about it sent out from the display memory

The Colour Palette

The final link in the chain that leads to the creation of colour is the colour palette. We have already seen how the display memory and the video shift register can be combined to produce pixels which can either be in one of four states (in 2 plane mode) or in one of 16 states (in 4 plane mode) The usefulness of these numbers is that the ST possesses a set of 16 registers which can be used to allocate a different colour to each of the 16 values that a single pixel can take

Each of the 16 registers has nine usable bits, three for each of the colours red, green and blue What this means is that any one register can specify a colour made up of one of eight shades of red, one of eight shades of green and one of eight shades of blue – a total of 512 possible colours, though some will in effect be identical Whichever colour is specified by colour register one will be the colour of every pixel whose combined planes produce a value of one for it

In 4 plane mode, all of the 16 colour registers can be used, but in 2 plane mode only the first four colour registers have any effect

Complex graphics

In all of this there is no reference to the way in which the ST can create and move complex shapes around the screen at such speed. The reason for this is that these abilities are an aspect of the Digital Research Gem system which is described in a separate article. Even so, the quality of what the user sees on the screen depends as much on the ST's hardware as it does on Gem and there is no doubt that in the graphics system of the ST the Gem system has met its match.

The Audio system

The last few years have seen an explosion of interest in the subject of the electronic generation of music. Musicians of even 10 years ago would probably find it difficult to believe the extent to which popular music of all kinds has been transformed by electronic techniques to the extent one or two musicians can today produce combinations of sound which would once have required half an orchestra.

While at the top end of the market it is possible to pay many thousands of pounds for equipment to synthesise sound electronically, it is often not recognised that many of these systems are based on standard, inexpensive and widely available chips. While a system like the ST is clearly not going to be able to rival super-synthesisers in quality it is nevertheless based on a very capable sound chip produced by General Instruments and rejoicing in the name AY-3-8910 Using the full abilities of a synthesizer is seldom a simple matter, if only because understanding the nature of sound itself is seldom a simple matter, but if you care to make the effort it is quite possible to produce an astonishing range of effects

In addition to the on-board sound capabilities of the ST, Atari have built into the ST the Midi interface which has become the industry standard for communication between electronic instruments and so the ST is capable of controlling a wide range of devices

The Sound Generator

The Programmable Sound Generator chip is the device used by the ST to produce, through an external speaker like that of the monitor, all the sounds of which the system is capable, from the full score of a piece of classical music to a single key-click. The PSG has the capability to produce tones with a frequency anywhere in the capability to produce tones with a frequency anywhere in the range of 30 hertz (30 cycles per second) up to 125 kilohertz (125 000 cycles per second) or, to put it another way, from some of the lowest recognisable tones to above the range of hearing

Each single note which the ST produces is the work of the PSG alone, relieving the main system of the need to be constantly checking that a particular note has been played for the correct amount of time or whether the "shape" of the note has to be altered as it progresses in order to create the correct "envelope" The main-system plays a part, however, in that the PSG has to be supplied with the notes it is to play, in order, together with information about their length, shape and so on The PSG is capable of dealing

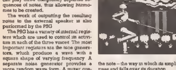
with instructions for three separate "voices" at the same time, that is to say it can play three completely separate sequences of notes, thus allowing harmonies to be created.

The work of outputting the resulting notes to the external speaker is also performed by the PSG

The PSG has a variety of internal registers which are used to control its activities in each of the three voices The most important registers are the tone generators, which produce a wave with a square shape of varying frequency A separate noise generator provides a more random wave form. A mixer control register allows the outputs of the tone generators and noise generator to be mixed together.

The amplitude, or volume, of a tone is controlled by the amplitude registers. The amplitude of a particular tone can either be set to a constant level or the note can be given a shape, or "envelope" using the envelope generator registers in conjunction with the amplitude registers

The question of note envelopes is quite a complex one which cannot be discussed in detail here but briefly, the distinctive sound of any particular instrument is a matter of the combination of the shape of the sound wave it produces (or the combination of different shaped waves), together with the envelope of



the note – the way in which its amplitude rises and falls over its duration

Instruments with sharp or "twangy" sounds tend to produce notes which rise from nothing very quickly and then die away quickly

Slightly softer sounding instruments may produce notes which rise more slowly but linger longer

The Midi Interface

The ST comes equipped with the Midi interface, an acronym which stands for Musical Instrument Digital Interface The basis of the standard is agreed form of "serial communication" (see the later section on the RS232 port) at a rate of 31250 bits per second Midi is simple, almost crude in its connections, requiring two channels – Midi In and Midi Out – with a third channel called Midi Thru which allows data to pass along the channel provided by the other two, bypassing the piece of equipment fitted with the interface.

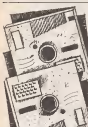
On the ST the Midi interface is controlled by another Motorola developed chip, the MC6850, which is a communications chip

The object of Midi is to allow any two electronic instruments which conform to the standard to swap information and instructions about what they are doing and what they expect other pieces of equipment to do

Midi is an ideal standard for a microcomputer in that it is relatively simple to implement and requires only a 5-pin DIN plug to connect up equipment which can then be controlled by the micro

Within certain limits, the Midi interface allows the user to communicate with up to 16 different pieces of equipment to produce complex synchronised effects or complete compositions – but do be sure, before you rush out and spend more on a set of equipment than on the ST itself, that you have the software to deal with the equipment

There are differences between the ways manufacturers implement the Midi control codes and mistakes can be expensive This is not simple, and an area for specialist advice but you can be sure that if all else is well, the ST won't hold you back.



GREAT ESCAPE

by G Mayhew

The object of the game is to guide the Software (on disc) through the inside of your '84, to escape at the right hand side of the screen. Guide the disc using the joystick in port 2

This is not easy though, several hazards are facing you. They are some of the microchips in the C64, these include SID, VIC, 6510 etc. The disc can only be corrupted (ie, collide with the chips) three times, so care must be taken. If three errors occur the game is over. If the disc is guided out, then the disc returns to the start, and the game increases in speed until it is impossible to escape! The number of errors and discs that have been freed, is displayed on the screen in the panel on the right.

Memory map

\$3000 – \$C000	Character set
\$C000 – \$C74A	M/C and screen data

The M/C and screen data can be broken down into further sections

\$C000 – \$C09C	IRQ interrupt
\$C09D – \$C0A1	Download screen
\$C0A3 – \$C18A	Main Game play
\$C12C – \$C1F3	End of game
\$C1F4 – \$C235	Download sprite
\$C204 – \$C244	Sprite data
\$C246 – \$C847	Screen data
\$C848 – \$C74A	Character colours

When the program is *Run* (after saving) the data will be poked into memory, and then the next part loaded. The program checks whether you are using disc or tape

Part two of the data next week

```
100 FOR AD=12288 TO 14236 READ A T=T+A
110 POKE AD,A NEXT AD
120 IFT<>69134THENPRINT"DATA ERROR" END
130 :
140 PRINT"[CLR]"
150 A$=CHR$(34) PRINT"LOAD"A$"TAG,PT2"A$",",PEEK(186) POKE198,2
160 POKE631,19 POKE632,131 NEW
170
500 DATA 109,126,231,219,219,231,126,108,56,124,238,254,238,238
501 DATA 238,0,252,238,238,252,238,238,252,0,124,238,224,224,224
502 DATA 238,124,0,252,238,238,238,238,238,252,0,254,238,236,200
503 DATA 224,238,254,0,254,238,224,248,224,224,224,0,124,238,224
504 DATA 238,238,238,124,0,238,238,238,254,238,238,238,0,254,56
505 DATA 56,56,56,56,254,0,126,28,28,28,28,220,252,0,238,238,252
506 DATA 248,252,238,238,0,224,238,224,224,224,238,254,0,198,238
507 DATA 254,254,254,238,238,0,206,238,254,254,254,238,238,0,124
508 DATA 238,238,238,238,238,124,0,252,238,238,252,224,224,224,0
509 DATA 124,238,238,238,238,124,14,0,252,238,238,254,252,238,238
510 DATA 0,124,238,224,124,14,238,124,0,254,56,56,56,56,56,56,0
511 DATA 238,238,238,238,238,254,124,0,238,238,238,238,238,124,56
512 DATA 0,238,238,238,238,254,238,198,0,238,238,124,56,124,238
513 DATA 238,0,238,238,238,124,56,56,56,0,254,14,28,56,112,224,254
514 DATA 0,255,0,0,0,0,0,0,0,192,192,192,192,192,192,192,192,0,0
515 DATA 0,0,0,0,0,255,3,3,3,3,3,3,3,3,255,192,192,192,192,192,192
516 DATA 192,0,0,0,0,0,0,0,0,7,15,15,28,0,96,96,0,192,192,192,192
517 DATA 192,192,192,255,3,3,3,3,3,3,3,255,255,3,3,3,3,3,3,3,0,0
518 DATA 0,0,0,0,0,0,0,60,102,60,56,103,102,63,0,0,56,56,56,0,0,0
519 DATA 0,56,56,112,112,112,56,56,0,56,28,14,14,14,28,56,0,60,66
520 DATA 153,161,161,153,66,60,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
521 DATA 0,0,126,126,0,0,0,0,0,0,24,60,24,0,0,0,0,0,0,0,0,0,134
522 DATA 254,238,238,238,254,124,0,36,60,124,28,28,126,126,0,124
523 DATA 238,14,28,56,254,254,0,124,238,14,28,14,238,124,0,224,224
524 DATA 224,224,238,254,12,0,254,254,224,252,14,254,252,0,124,238
525 DATA 224,252,238,254,124,0,254,238,14,28,56,56,56,0,124,238
526 DATA 238,124,238,238,124,0,124,238,238,126,14,238,124,0,0,0
527 DATA 56,56,0,56,56,0,0,0,112,112,0,112,112,224,0,0,0,0,0,0,0
528 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,62,127,103,14,28,0,28
529 DATA 28,0,0,0,0,0,0,0,0,0,15,127,127,15,0,0,0,0,240,254,254
530 DATA 240,0,0,0,24,24,24,60,60,60,60,31,31,127,31,31,127,31,31
531 DATA 240,240,254,240,240,254,240,240,255,255,255,255,255,255
532 DATA 255,255,0,0,0,0,0,0,0,0,0,100,0,255,255,255,255,255,0
533 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
534 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
535 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
536 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
537 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
538 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
539 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
540 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
541 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
542 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,60,90,90,60,24,24
543 DATA 24,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
544 DATA 0,0,0,0,0,0,0,255,255,255,255,255,100,100,0,0,0,0,0,0,0,0
545 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
546 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
547 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
548 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
549 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
550 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
551 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
552 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
553 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
554 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
555 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
556 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
557 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,126
558 DATA 124,126,126,126,126,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
559 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
560 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
561 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
562 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
563 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
564 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
565 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
566 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
567 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
568 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
569 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
570 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
571 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
572 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
573 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
574 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
575 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
576 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
577 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
578 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
579 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
580 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
581 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
582 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
583 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
584 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
585 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,95
```

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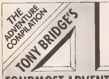
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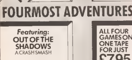
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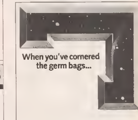
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GLOBAL SOFTWARE







CRYPTO

by James Tallett

This program is really written for the younger user who wants to send and receive 'secret' messages, but can be used by anyone where prying eyes are not wanted.

When loaded the menu will be displayed giving you the option of encrypting text or decrypting a previously encrypted text. When encrypting you will be given the choice of saving your encrypted text to tape and/or printer, and when decrypting you can enter your encrypted code via the keyboard or direct from tape. Your decrypted text will then appear on screen with the option of printing the decrypted text to printer or rerunning the program. In either case at the start you will be asked for a code number, this can be any number between 1 and 9999 inclusive. It is imperative that the same number is used for decryption as encryption or else you will finish up with nonsense or at the worst an "integer out of range" error message. Your code number is not included on the tape saved code or printout of the encrypted code for obvious reasons, but you could obviously write a list of code numbers with a friend to be used on certain source dates.

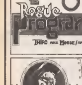
The program works by using the code number as a seed for Randomise which will cause each random number to be picked in a set sequence starting at a certain place set by the function (see Chapter 11 of the Spectrum manual). So when encrypting, the code number of each character of the text is added to the next (pseudo) random number in the sequence multiplied by the code number. When decrypting, the reverse is the case as the encrypted code is taken away from the random number. The result of this is that even keywords and graphics characters can be encrypted and decrypted.

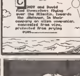
The program is about 8K long so if you do not fancy typing it all in you can get a copy on tape by sending £2 to me at Vaterasy, Kytra, Fort Augustus, Inverness-shire, PH32 4BY. If anyone is interested I also have a ZX81 (16K) version but it does not have the facility of saving and loading the code to/from tape.

```
  10 REM **INITIALISATION**
  11
  20 POKE 23609,50  REM raise b
beep
  25 POKE 23658,0  REM caps lock
off
  30 LET tapesave=300
  35 LET tapeload=360
  40 LET rerun=400
  50 LET keyboard=500
  53 LET codee=530
  55 LET codee2=550
  60 LET codeno=600
  66 LET lprint=650
  70 LET txtinpt=700
  75 LET decrypt=750
  80 LET encrypt=800
  90 LET savcode=900
 100 BORDER 1  POKE 23693,15  CL
S
 110 LET a$="*************------
************       SPECTRUM CR
YTOGRAPH     *******************
*************"
 199
 200 REM **MENU**
 201
 205 PRINT a$
 206 PRINT  TAB 11 **MENU**
 210 PRINT    "Enter
1 for encryption.''        2 f
or decryption.''''   **********
**********************"
 215 PRINT #1, INK 5."      (c) J
A TALLETT 1985"
 220 GO SUB keyboard
 230 GO SUB (1000 AND b$="1")+(2
000 AND b$="2")  GO TO 200
 299
 300 REM **tapesave**(save encry
pted code to tape
 301
 310 BEEP .1,35  POKE 23658,0  I
NPUT "What title? ",e$
 320 SAVE e$ DATA e()
 330 PRINT #1,"REWIND & REPLAY T
O VERIFY -     If fails then GOT
O 300."
 335 VERIFY e$ DATA e()
 340 PRINT #1,E$." o/k, any key
to continue."
 350 PAUSE 0  BEEP .1,35  RETURN
 359
 360 REM **tapeload**(load encry
pted code from tape)
 361
 365 BEEP .1,35  POKE 23658,0  I
NPUT "What title? ",e$
 367 PRINT #0,"Start tape."  REM
flashing text.
 370 LOAD e$ DATA e()
 380 PRINT #1,E$." o/k, any key
to continue."
 390 PAUSE 0  BEEP .1,35  RETURN
 399
 400 REM **rerun**(RERUN PROG?)
 401
 410 BEEP .1,35  PRINT #1,"RERUN
! are you sure? Y or N  "
 420 IF INKEY$<>"" THEN GO TO 42
0
 430 POKE 23658,8  REM caps lock
 440 IF INKEY$="N" THEN BEEP .1,
35  POKE 23658,0  RETURN
 450 IF INKEY$="Y" THEN BEEP .1,
35  RUN
 460 GO TO 430
 499
 500 REM **keyboard**(read keybo
ard for menu outing.)
 501
 505 DIM b$(1)  LET b$=INKEY$
 510 IF b$="" OR b$=" " THEN GO
TO 500
 520 RETURN
 529
```

Spectrum

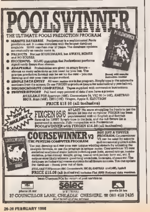
The Rogue Program











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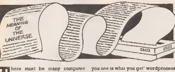


UNDER THE MORTUARY

by Sunil Jagota

This week, your next dose of data – plus a screen dump from one of the 28 screens . just so you can see that all the effort will be worthwhile! But if you don't feel like all that typing, then you can obtain a tape copy of the program from Sunil for the sum of £4. Write to him at 89 Coutts Road, Walkergate, Newcastle-upon-Tyne.

```
[illegible]
```



WORD PROCESSOR

by Glenn Counsell

There must be many computer owners like myself who, whilst very interested in the idea of a wordprocessor, have never felt like forking out the £20+ needed to buy a decent one.

This program for the Amstrad 464 with/without DD1, Amstrad 664 and Amstrad 6128 to be published over the next few weeks, is a fully fledged 'what you see is what you get' wordprocessor that compares favourably with many on the market.

Despite being written in Basic, it has many of the complicated features (search-and-replace, block transfer...) found only in the best commercially available ones and should give the user a valid first entry into the field.

More listing and the beginning of the functions description next week, but if your fingers can't stand so much button pushing so early in the year then copies of the program can be obtained from G. Counsell, 216a Banbury Rd, Oxford for £7.00 (disc) or £3.00 (tape).

Please state also whether you require the version of the program to work on disc or tape.

```
10 ON BREAK GOSUB 5000
20 MODE 2
30 BORDER 0:INK 1,26:INK 0,0:PEN 1:PAPER 0:PEN #3,
0:PAPER #3,1
40 cplr=1:tl=1:prly=0:plkq=0:dlf=0:bkt4g=0:bufg=0
50 DIM keyy%(255,1)
60 WINDOW #4,9,13,1,1:WINDOW #5,27,32,1,1
70 WINDOW #6,40,80,1,1:WINDOW #7,1,30,2,2
80 DATA 06,01,11,70,a6,21 c3,9e,cd 77,bc,32,10,a8,
c9
90 MEMORY &A0FF
100 FOR i=&A0FF TO &A10E:READ a$:POKE i,VAL("&"+a$
):NEXT i
110 PRINT"text width or file name ? ";
120 txtg=1:GOSUB 5460:nalg=1
130 q=VAL(q$)
140 IF STR$(q)=" "+q$ THEN 190
150 LOCATE 1,1:GOSUB 3620
160 IF PEEK(&A10F)=22 THEN 180
170 LOCATE 27,1:PRINT CHR$(7);:GOTO 120
180 GOSUB 2570:GOTO 230
190 IF q>3 AND q<79 THEN 210
200 CLS:GOTO 110
210 ndl=INT(26000/q)
220 DIM a$(ndl)
230 l=INT((80-q)/2):r=80-l:WINDOW #2,l,r,3,25
240 FOR i=1 TO 31:keyy%(i,0)=1:NEXT i
250 FOR i=32 TO 255:keyy%(i,0)=2:NEXT i
260 CLS:PEN #2,0:PAPER #2,1:CLS #2
270 IF BIN$(VAL(q$))=" "+q$ THEN 310
280 pl=tlb
290 IF tlb>23 THEN pl=23
300 FOR k=1 TO pl:PRINT#2,a$(k):NEXT k
310 DATA 240,241,242,243,13,127,19,16,18,6,10,4,20
,3,5,8,16,246,247,244,245,248,249,14
320 FOR i=1 TO 24:READ k:keyy%(k,0)=2:keyy%(k,1)=i
:NEXT i
330 cpud=1:tl=1
340 PRINT"line #          text length"
350 CLS #4:PRINT #4,tl:CLS #5:PRINT #5,tlb
360 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
370 a$=INKEY$
380 IF a$="" THEN 370
390 ON keyy%(ASC(a$),0) GOTO 370,400,420
400 tlb=INT(q*(cplr)-ptl0)
410 ON keyy%(ASC(a$),1) GOSUB 820,1150,1470,1670,1
760,1910,2000,2210,2340,2700,3320,3600,3800,3760,4
6[illegible],4500,2700,1470,1430,690,1160,4800,5110,5550
420 GOTO 370
430 tlk=intg*(ntt)-ptl0)
440 GOSUB 160
450 GOTO 370
460 IF LEN(a$(tl))+1>q THEN 530
470 IF cplr<>LEN(a$(tl))+1 THEN 770
480 LOCATE #2,cplr,cpud:PRINT#2,a$;
490 a$(tl)=a$(tl)+a$
500 cplr=cplr+1
510 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
520 RETURN
530 IF tl=tlb AND cplr=(LEN(a$(tl)))+1 THEN 550
540 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
550 IF tlb=ndl THEN 540
560 a$(tl)=a$(tl)+a$
570 FOR i=LEN(a$(tl)) TO 2 STEP -1:IF MID$(a$(tl),
i,1)=" " THEN 610
580 NEXT i
590 a$(tl)=LEFT$(a$(tl)),(LEN(a$(tl))-1)
600 RETURN
610 cplr=LEN 1
620 LOCATE #2,cplr,cpud
630 WINDOW #3,cplr,r,cpud+2,cpud+2:CLS #3
640 IF cpud>23 THEN 670
650 LOCATE #2,r,25:PRINT#2
675 cpud=cpud+1
680 cplr=1:tl=tl+1:tlb=tlb+1
690 LOCATE #2,cplr,cpud
700 a$=RIGHT$(a$(tl-1),(LEN(a$(tl-1))-i))
710 PRINT#2,a$;
720 cplr=LEN(a$)+1
730 a$(tl)=a$:a$(tl-1)=LEFT$(a$(tl-1),i-1)
740 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
750 CLS #4:PRINT#4,tl:CLS #5:PRINT#5,tlb
760 RETURN
770 LOCATE #2,cplr,cpud
780 a$=RIGHT$(a$(tl),(LEN(a$(tl))-cplr+1))
790 PRINT#2,a$;a$
800 a$(tl)=LEFT$(a$(tl),(cplr-1))+a$+a$
810 cplr=cplr+1
820 LOCATE #2,cplr,cpud:PEN #2,1:PAPER #2,0
830 PRINT#2,LEFT$(a$,1);:PEN #2,0:PAPER #2,1
840 RETURN
850 clg=0
860 IF ASC(a$)=244 THEN clg=46
870 IF cpud=1 AND tl<(1+clg)+nlg*(q-2) THEN 1050
880 IF tl=1+nlg*(q-2) THEN 1140
890 IF cpud=1 THEN 1070
900 IF cplr<(LEN(a$(tl)))+1 THEN 930
910 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,1
);
920 GOTO 940
930 LOCATE #2,cplr,cpud:PRINT#2," ";
940 IF ASC(a$)<>244 THEN 980
950 tl1=tl:tl=tl-cpud+1
960 IF tl<1+intg*(n-2) THEN tl=1+intg*(n-2)
970 cpud=cpud-tl1+tl:GOTO 990
980 cpud=cpud-1:tl=tl-1
990 cplr=LEN(a$(tl))+1
1000 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1010 CLS #4:PRINT#4,tl:tl0
1020 RETURN
1030 IF tl1=intg*(n-3) THEN 1050
1040 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1050 tl=1+intg*(n-2)
1060 GOTO 1080
1070 tl=tl-10-clg
1080 LOCATE #2,1,1
1090 FOR i=tl TO tl+21:PRINT#2,a$(i);CHR$(10):NEXT
 i
1100 PRINT#2,a$(tl+22);CHR$(10);
1110 cplr=LEN(a$(tl))+1
1120 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1130 CLS #4:PRINT#4,tl:tl0
1140 RETURN
1150 clg=0
1160 IF ASC(a$)=245 THEN clg=46
1170 IF cpud=23 AND tl>tlb-(1)-clg THEN 1340
1180 IF cpud=23 THEN 1380
1190 IF tl<tlb THEN 1210
1200 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1210 IF cplr=(LEN(a$(tl)))+1 THEN 1240
1220 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);
1230 GOTO 1250
1240 LOCATE #2,cplr,cpud:PRINT#2," ";
1250 IF ASC(a$)<>245 THEN 1290
1260 tlt=tl:tl=tl+cpud+23
1270 IF tl>tlb THEN tl=tlb
1280 cpud=cpud+tl-tlt:GOTO 1300
1290 cpud=cpud+1:tl=tl+1
1300 cplr=LEN(a$(tl))+1
1310 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1320 CLS #4:PRINT#4,tl:tl0
1330 RETURN
1340 IF tl<tlb THEN 1360
1350 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1370 GOTO 1390
1380 tl=tl+22:tl=tlb
1390 LOCATE #2,1,1
1400 FOR i=tl TO tl+22:PRINT#2,a$(i);CHR$(10):NEXT
 i
1410 PRINT#2,a$(tl+22);CHR$(10);
1420 tl=tl+22:cpud=23
1430 cplr=LEN(a$(tl))+1
1440 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1450 CLS #4:PRINT#4,tl:tl0
1460 RETURN
1470 IF cplr<>1 THEN 1490
1480 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1490 IF cplr<>(LEN(a$(tl)))+1 THEN 1570
1500 LOCATE #2,cplr,cpud:PRINT#2," ";
1510 IF ASC(a$)<>246 THEN 1530
1520 cplr=1:GOTO 1540
1530 cplr=cplr-1
1540 PEN #2,1:PAPER #2,0:LOCATE #2,cplr,cpud
1550 PRINT#2,MID$(a$(tl),cplr,1);:PEN #2,0:PAPER #
2,1
1560 RETURN
1570 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);:PEN #2,1:PAPER #2,0
1580 IF ASC(a$)<>246 THEN 1600
1590 cplr=1:GOTO 1610
1600 cplr=cplr-1
1610 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);:PEN #2,0:PAPER #2,1
1620 RETURN
1630 IF cplr<>(LEN(a$(tl)))+1 THEN 1650
1640 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1650 IF cplr<>(LEN(a$(tl))) THEN 1700
1660 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);
1670 cplr=cplr+1
1680 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1690 RETURN
1700 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);:PEN #2,1:PAPER #2,0
1710 IF ASC(a$)<>247 THEN 1730
1720 cplr=LEN(a$(tl)):PEN #2,0:PAPER #2,1:GOTO 1
680
1730 cplr=cplr+1
1740 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);:PEN #2,0:PAPER #2,1
1750 RETURN
1760 IF tl=tlb THEN 1780
1770 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1780 IF tlb=ndl THEN 1770
1790 IF cplr=(LEN(a$(tl))+1) THEN 1830
1800 LOCATE #2,cplr,cpud:PRINT#2,MID$(a$(tl),cplr,
1);
1810 GOTO 1830
1820 LOCATE #2,cplr,cpud:PRINT#2," ";
1830 IF cpud<23 THEN 1860
1840 LOCATE #2,r,25:PRINT#2
1850 GOTO 1870
1860 cpud=cpud+1
1870 cplr=1:tl=tl+1:tlb=tlb+1
1880 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1890 CLS #4:PRINT#4,tl:tl0:CLS #5:PRINT#5,tlb
1900 RETURN
1910 IF cplr<>1 THEN 1930
1920 SOUND 1,40,3,12:SOUND 1,40,1,0:RETURN
1930 IF cplr<>(LEN(a$(tl)))+1 THEN 1990
1940 a$(tl)=LEFT$(a$(tl),(LEN(a$(tl))-1))
1950 LOCATE #2,cplr,cpud:PRINT#2," ";
1960 cplr=cplr-1
1970 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
1980 RETURN
```



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Demon spell

Some people have written about the *Fairlight* hacking routine that we printed a few weeks ago. This listing was produced from a working copy tape and there is nothing wrong with it, the problem is that there are two different copies of *Fairlight* doing the rounds so you may have the wrong sort.

Chris Allen, who prepared the routine for us, has kindly offered that if anyone who still has problems will write to him with a SAE and a tape, he will try to sort it out. Chris's address has appeared more than once in the column, but anyone who hasn't got it can write care of me.

Now then Melbourne House's queer, but enjoyable *Rock 'N' Wrestle* is deservedly riding high in the charts. Here is a small tip for the game from Chris Eastwood of Witney. All you need to do is lock the other wrestler and, on the early stages at least, he won't move or do anything. Keep doing this until he runs out of energy and then just throw him.

Chris has also found some useful bugs in some other popular Commodore games. On the CBM version of Ultimate's *Underwurlde*, start the game and go left into the dead end. Stand under the clock's left pendulum and jump upward. You will bounce sideways up past the clock and through the roof to level 14. If it doesn't work the first time, try it again as it is very useful for skipping about 25 screens.

On Ultimate's *Outlaws* after you have shot one of the outlaws in the street, continue to shoot the flashing '200' and you will find that the amount of outlaws you need to kill is decreased every time you hit it.

Paul Miller has provided us with another excellent routine (above) for the Spectrum version of *Raid Over Moscow*.

```
 5 REM  Raid Over Moscow Pokes
10 CLEAR 65535:POKE 65535,195
20 FOR A=65043 TO 65081:READ B:POKE A,B:
   NEXT A
30 PRINT AT 0,0;"Play tape from start"
40 RANDOMIZE USR 65075
50 MERGE ""sLOAD ""
99 REM
        MACHINE CODE DATA

100 DATA 245,229,58,239,95,254
110 DATA 63,32,15,237,86,237,71
120 DATA 33,167,167,34,230,96
130 DATA 62,62,50,217,96,62,167
140 DATA 51,212,96,195,50,0,62
150 DATA 51,237,71,237,96,201

When the game has loaded, it will return to Basic
you then enter your pokes (See Below), and then to
run the game enter,
                        RANDOMIZE USR 32768

 POKE 46512,182
 POKE 30419,182        Infinite Lives
 POKE 37473,174
 POKE 37474,157        Bypass Hanger Screen
 POKE 40299,182
 POKE 43364,182
 POKE 46307,182
 POKE 49130,192
 POKE 43364,182        Infinite planes during
                       attack run
```

Now we can return to the complete *Dragontorc* solution – with thanks to Hewson for supplying not only the tips, but also one of the most complex and enjoyable games available.

Ruins of Cantii

We left you in the ruins of Canto just after you have found the crown symbol in the chest. You must now try and get out with this. Beware of the axe and fireball room and use *Slow* and *Unseen* if necessary.

Search the tomb with the crown symbol and you should find another stone and the message 'When four are gone smite anvil with stone' ie, use the crystal of antithought when the four crowns are destroyed. Use the two S symbols to reveal the exit or use the *Return* spell. Go to Halgar's anvil and place the crown on it.

Search the leaves for the *Bane* gem. Take the bird and you get the message 'Set a thief . . . ' Search the stump for a coin. Put the coin in the water and jump in to go to Hellsmouth. Bring the torch here.

This is inhabited by 'nervous but deadly' yellow imps that have the habit of firing at you and running off. Use *Warrior* to get there and use *Wall* to protect against their missiles. This place is also inhabited by bats, killed by missiles, and snakes, killed with a torch.

Find the axe to smash the eggs, avoid or kill the snakes and take the chest key. Find the chest and open it to get the crown symbol.

Place the symbol on the cursed key, avoiding the balls of red fire. *Unseen* or *Slow* will help here.

Use the key to unlock the door. Fire the *Demon* spell when you see the demon (this is what the message 'Set a thief . . . ' means, ie, use like to deal with like). Take the crown. Kill the eyes with *Bane*. Put crown symbol on stone to leave or use *Return*. Put the third crown on the anvil to destroy it.

The Cursed Crypt

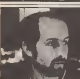
The next area to explore is largely uninhabited woods but there is a goblin patrol that has found a chest. Use *Mantle* to protect yourself from demon missiles. Kill the demon with *Missile*.

First find the rabbit. Place it down the hole to get the key. Go back to the circle. Take the other path. Find the chest and open it with the key. Take the *Ankh* symbol. Go back and get the rabbit again. Find the single hole. Put the rabbit down it and avoid the snake. Take the spell from the hole.

Take the rabbit to the carrots to reveal the flagstone. Use the *Ankh* to move the stone and go down, taking the cursed key and the symbol. The torch will again be useful. The underground is inhabited by wraiths, use *Bane* on them. More next week.

Underworlde from Ultimate

Tony Bridge's Adventure Corner



Beatlemania

One, two, three, four, can I have a little more/Five, six, seven, eight, nine, ten, I love you. And we all love *The Beatles* right? Well, you may be a little too young to remember the days when all that mattered was the latest Beatle record, or how Ringo was cutting his hair or how high Paul's heels were this week. But back in '65 or so, these nuggets of information were essential to anyone who wanted to retain their credibility. What is the relevance of all this, I hear you ask. Well, *Beatle Quest*, from Number 9 Software, available as a text adventure for some months now on the Commodore, has been recently released with added graphics for the Spectrum.

Esoteric

In the '60s, which one or two of you may remember, every single line of a Beatles song and every album cover was pored over by self-respecting fans searching for esoteric clues. There were those who claimed to have discovered that Paul McCartney was dead (the number plate on the Beetle – geddit? – was 28IF, meaning, of course, that Paul *would* have been 28 that year *if* he had lived) while others claimed to have heard strange prophecies in the run-off groove of Sergeant Pepper.

Charles Manson took it all one step further when he listened to songs like *Helter-Skelter* ("Look out 'cos here she comes") and *Piggies* ("What they need's a damn good whacking") he went out and whacked Sharon Tate and several other innocent bystanders.

Oh, that the home computing was big and *The Quill* available, back then! Garry Marsh, the author of *Beatle Quest*, would have surely been right there with the rest of us Beatle fans, bringing our favourite lyrics to life. As it is, *The Quill* has come a few years too late, but there is still of course a vast army of Beatle maniacs (like myself) who are prepared to invest in anything that might recapture for a moment those great days of the late '60s.

Garry is a great student of Beatledom, particularly the lyrics of their songs. *The Quest*, first of a trilogy, contains many esoteric references to the songs, and much of the scenario of the adventure follows the storyline of the songs mentioned. Obviously then, a dedicated fan will catch many references that others might miss, and so probably gain a better insight into the game than a beginner in Beatle lore. For example, the dreaded 'Quill-kill' comes into play in the first few moves.

Bed-sit

The first location allows plenty of exploration, and there are several useful objects to be found here. But, venture outside the door of the Bed-sit and you have a certain number of moves before Maxwell's Silver Hammer comes down upon your head and you're done for. You just have enough time, though, to get upstairs, go in to the bathroom, and find that the window looks to have been recently opened. Aha! *She Came in Through the Bathroom Window* springs immediately to mind, doesn't it? Well, listen to *Abbey Road* and the second line of the song will give you a pretty strong clue as to how to escape Maxwell's 'orrible 'ammer. Never mind if you don't actually know the song, you'll find the solution to this particular problem if you just apply the adventurer's code and search thoroughly.

And so go most of the problems – a Beatle lover's insight will make the whole thing more pleasurable, but the game can certainly be worked through by anyone using just the usual amount of thought (you'll even come across the obligatory herring, though this one is very useful).

In fact, just about every location contains some such memory-stirring device. In the market place, as you will have guessed, you'll find a barrow, marked 'Desmond and Molly Jones'. That's a more easily recognisable reference to *Ob-la-di, Ob-la-da*, and may thus afford some sort of clue if you remember the lyric to that song.

But to start at the beginning . . . as keeper of The Archives, a treasure-house of all the remnants of Earth's history, residing for some reason on Space Station 8 in the year 2053. Your needs are catered for by the supreme machine, Sel Tanb 4. Becoming fascinated by the ancient stories of the 'Four Kings of Emi' and their battle with 'Their Satanic Majesties' you feed all known data into the memory banks of the pleasure-dome, where dreams become reality – even the dream of time-travel.

So it is that you find yourself transported back to that small bed-sit circa 1963. Across the room is 'a girl, just 17, and the way she looked was just beyond compare'. Of course, I immediately tried dancing with her (after all, how could I dance with another?) – nothing doing. Then I tried holding her hand (aha, I thought, a *double* reference here, 'I held her hand in mine' form the same song, as well, *I Wanna Hold Your Hand*) but still nothing. The only response unfortunately, is elicited by doing something naughty, in which case, you're dead!

Puzzle

One of the songs that will come in particularly handy, bearing in mind the enlightened age of the late '60s is *Lucy in the Sky with Diamonds*.

You'll have a chance to sit in the train with plasticine porters with looking glass ties and be transported via a certain substance (found near the start) to a boat on a river with tangerine trees and marmalade skies. There's also a nice little puzzle involving those 'flowers that grow so incredibly high' in an amusing pastiche of the well-known Level 9 problem.

Beatle Quest is *Quill*'d, *Patch*'d, *Illustra*'d and very well written for the Spectrum and Commodore on one tape. The character set is attractively legible, and the Ramsave feature is welcome. Not only do the problems and descriptions drip with Beatle references, but so do the responses. 'I don't understand' becomes instead 'Goo goo g'joob' and 'Help' of course gets the reply (obviously) 'You'll get by with a little help from your friends'.

Beatle fans get this one at all costs – it's the official version, as Garry Marsh has obtained permission from ATV Music to use the lyrics.

Game *Beatle Quest* **Supplier** Number 9 Software **Address** 47 St Georges Avenue West, Wolstanton, Newcastle, Staffordshire **Micro** Spectrum/Commodore 64 **Price** £9.95

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Charts



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1	(–)	Kung Fu Master	(US Gold)	£9.95
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All figures compiled by Gallup/Microscope

Top Twenty

1	(1)	Kung Fu Master *(C64)*	US Gold
2	(16)	Elite *(Spectrum/C64/BBC/Amstrad)*	Acornsoft/Firebird
3	(–)	Eidolon *(C64/Atari)*	Activision
4	(2)	Yie Ar Kung Fu *(Various)*	Imagine
5	(7)	Formula One Simulator *(Various)*	Mastertronic
6	(13)	Hypersports *(Various)*	Imagine
7	(–)	Movie *(Spectrum)*	Imagine
8	(18)	Barry McGuigan *(Spectrum/C64/Amstrad)*	Activision
9	(4)	Rock 'n' Wrestle *(C64)*	Melbourne House
10	(3)	Winter Games *(Spectrum/C64/Amstrad)*	Epyx/US Gold
11	(9)	Action Biker *(Spectrum/C64/C16/Amstrad)*	Mastertronic
12	(12)	Finders Keepers *(Spectrum/C64/Amstrad/MSX)*	Mastertronic
13	(–)	Big Mac *(C64/C16)*	Mastertronic
14	(5)	Commando *(Spectrum/C64)*	Elite
15	(6)	BMX Racers *(Spectrum/C64/C16)*	Mastertronic
16	(14)	Spellbound *(Spectrum/Amstrad)*	Mastertronic
17	(10)	They Sold A Million *(Spectrum/C64/Amstrad)*	Hit Squad
18	(8)	Rambo *(Spectrum/C64)*	Ocean
19	(17)	Rockman *(Spectrum/C64/C16/Vic 20)*	Mastertronic
20	(–)	Vegas Jackpot *(Spectrum/C64/C16/Vic 20/Dragon)*	Mastertronic

Figures compiled by Gallup/Microscope

Readers' Chart No 62

1	(1)	Commando *(Spectrum/C64)*	Elite
2	(2)	Elite *(Spectrum/C64/BBC)*	Firebird/Acornsoft
3	(3)	Winter Games *(Spectrum/C64)*	Epyx/US Gold
4	(5)	Lord of the Rings *(Spectrum/Amstrad)*	Melbourne House
5	(6)	Rambo *(Spectrum/C64)*	Ocean
6	(7)	They Sold a Million *(Spectrum/C64)*	Hit Squad
7	(–)	Way of the Exploding Fist (various)	Melbourne House
8	(–)	Tomahawk *(Spectrum)*	Digital Integration
9	(2)	Saboteur *(Spectrum)*	Mastertronic
10	(10)	Swords and Sorcery *(Spectrum)*	PSS

Winning Phrase No 62. "CES! – get down to LA, man", from Laurence Scotford of Eastbourne in Sussex, who wins £25. An honourable mention to Mark Lumley of Morden, Surrey, for "Let sex win one Amiga"

Now voting on week 64 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 64 closes at 2pm on Wednesday February 26, 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name ....

Address ....

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My top 3: Voting Week 64

1......................................

2......................................

3......................................

My phrase is: ....

New Releases

QUIZZED

Play your Cards Right is a fairly naff TV quiz game in which a medium sized audience repeats certain phrases of Bruce Forsyth's It has now been converted into a computer game and now you can presumably shout at your computer instead of Bruce – I know I did

The game involves answering questions all based on guessing what percentage of the country said they would do want, eg, 'We asked ten thousand air hostesses whether they had ever eaten chocolate biscuits on duty' You have to guess the actual number that said 'Yes' more exactly than the computer (though quite how this section is supposed to work I know not, since the computer must have all the right answers)

Based on right answers, you then get to guess whether the next card in a sequence is higher or lower than the previous one This then leads on to the 'Super Game' in which you answer more questions on screen and in the time I spent with it no questions were repeated, so I guess there must be quite a few stored in memory

This would be a perfect budget game – there isn't anything clever about the programming, but it works quite well and however annoyingly, most of the office was playing it The reason for the price tag is, I suppose, the big name tie-in but I'm afraid that doesn't really justify it

Program *Play your Cards Right*
Price *£7 95*
Micro *Spectrum*
Supplier *Britannia Software, Unit M28, Cardiff Workshops, Cardiff CF1 5EB*



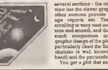
WHAT MORE?

CRL is justifiably proud of *Tau Ceti* – its 3D line graphics were mixed with excellent gameplay to produce a near classic game *Tau Ceti* is now available on the Amstrad and is as good as ever – maybe better

The idea of the game is to battle your way across a planet's surface searching for pieces of cooling rod which must be assembled and then used to destroy a reactor gone AWOL Sundry considerations include finding fuel, repairing damages and collecting missiles

The screen is divided into several sections – the cockpit view has the clever graphics, other sections provide damage reports etc. The 3D scrolling is very neat indeed, nice and smooth, and there is much imagination in the graphic design of the planet I particularly liked the flashing obelisks (a well known 80's band) and the pyramids

You get a plot that sustains



Pick of the week

BRAIN DAMAGE

Sweevo's Whirled is not spelt incorrectly, for this is the high powered 128 version of *Sweevo's World*, itself the Marx brothers version of *Alien 8*.

Sweevo's Whirled takes the original Sweevo game and brings the number of rooms up to 250 which is enough to ensure continuous brain damage for months on end The rest of the game is unchanged, as Sweevo armed only with a parachute, explores one of the strangest planets in the universe and is troubled by, among other things, a very nasty little girl.

On the 128 the game retains, obviously, its excellent, edge-on 3D graphics, but adds to this a fairly decent soundtrack using the brand new (well several years old actually) AY sound chip at the heart of the new machine

If and when you buy your 128, then this ought to be one of your first purchases And what's even better, it doesn't cost any more than the original.

Program *Sweevo's Whirled!*
Price *£7 95*
Micro *Spectrum 128*
Supplier *Gargoyle Games, 74 King Street, Dudley, West Midlands*

This Week

Program	Type	Micro	Price	Supplier
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Mini Office II	Ut	Amstrad	£19.95(D)	Database Software
CBasic Compiler	Ut	Amstrad (CP/M)	£49 95	Digital Research
Dr Draw	Ut	Amstrad (CP/M)	£49 95	Digital Research
Dr Graph	Ut	Amstrad (CP/M)	£49 95	Digital Research
Dr Draw	Ut	Amstrad (CP/M)	£49 95	Digital Research
Pascal MT	Ut	Amstrad (CP/M)	£49 95	Digital Research
Mini Office II	Ut	Amstrad/BBC B	£14 95(T)	Database Software
Lattice C Compiler	Ut	Atari 520ST	£99 95	Metacomco
MCC Pascal	Ut	Atari 520ST	£89 95	Metacomco
Macro Assembler	Ut	Atari 520ST	£49.95	Metacomco
Hotline Quiz	S	BBC B	£14.35	Chalksoft
Mini Office II	Ut	BBC B	£18.95(D)	Database Software
Commando	Arc	Commodore 16	£7.95	Elite
Kung-Fu Master	Arc	Commodore 64	£9 95(T)	US Gold
Kung-Fu Master	Arc	Commodore 64	£14 95(D)	US Gold
Sizzlers Vol 1	Arc	Commodore 64	£9 95(T)	Gremlin Graphics
Sizzlers Vol 1	Arc	Commodore 64	£14 95(D)	Gremlin Graphics
Hotline Quiz	S	Commodore 64	£12.95(D)	Chalksoft
Cad-64	Ut	Commodore 64	£14.95(T)	Orpheus
Cad-64	Ut	Commodore 64	£19.95(T)	Orpheus
Hotline Quiz	S	Commodore 64	£9 95(T)	Chalksoft
Fourmost Adventures	Adv	Spectrum	£7 95	Global Software
Attack of Killer Tomatoes	Arc	Spectrum	£7 95	Global Software
Skyfox	Arc	Spectrum	£8.95	Ariolasoft
Smashes Vol 1	Arc	Spectrum	£8.95	Gremlin Graphics
Hotline Quiz	S	Spectrum	£8.95	Chalksoft
3 Weeks in Paradise	Arc	Spectrum 128	£10.95	Mikro Gen
Fairlight I	Arc	Spectrum 128	£9 95	The Edge
Lode Runner	Arc	Spectrum 128	£9 95	Software Projects

the interest for what may be many hours of play, whizz-bang state of the art graphics and lots and lots of things to blow to bits I ask you, what more do you need?

Program *Tau Ceti*
Price *£8 95*
Micro *Amstrad(CPCs)*
Supplier *CRL*
9 Kings Yard
London E15

GEOMETRICAL

Rasputin is one of Firebird's Hot range of games – programs whose quality justifies a conventional rather than budget price tag The game is available on Spectrum and Amstrad as well, but only on the Commodore does it have the massed balalaikas of Prague as played by Rob Hubbard This is an important element.

Rasputin is a strange game, the basic plot is simple enough, jump on some things, stab other things and collect things What is odd is the sheer look of the game and its extraordinary difficulty. Whilst the former can be counted as a virtue, the latter nearly did for me the first few times I tried to play it.

Despite the name there is nothing that makes the game look particularly Russian. Its playing world is one of geometrical shapes – blocks and cubes – with medieval flourishes, like castle gates and towers and a wide variety of totally strange creatures most of which are unpleasant. Full marks for imagination. Full marks, too, for programming technique, the game features excellent animation combined with an unusual use of 3D perspective to give the whole thing a faintly Escher like look

The problem is the game is so difficult that it is quite possible you will never see its myriad screens, difficult not only in the dodging and timing sense but also in the "what the hell is going on anyway" sense It's a game that is crying out for every cheat poke under the sun and will doubtless get them, but I can't help thinking that the game shouldn't require that sort of desperate help two minutes after loading

If you want a really challenging game this is it, if you get frustrated easily all the wonderful graphics in the world won't help you with *Rasputin*.

Program *Rasputin*
Price *£7 95*
Micro *Commodore 64*
Supplier *Firebird*
Wellington House
Upper St Martins
Lane

POWERFUL

Amsdoc is a powerful utility program to generate annotated expanded listings for purposes of explanation and clarification. It would be ideal for schools using Amstrads or home users developing complex programs in Basic

The *Amsdoc* utility takes your Basic program and analyses it in various ways It then produces a new version of the listing which may be dumped to printer or screen The program is designed to highlight key elements such as the logical flow or subroutines and loops and the use of variables

Though there are many formats or annotation available within *Amsdoc*, all are essentially concerned with showing the program logic (or lack of it) For example, the *Flow List* option takes your raw program and produces a flowchart with each instruction in its logical order, ie, with *Gotos* and *Gosubs* paired with their respective destinations and the level of subroutine clearly marked. Variables are also listed with the lines in which they occur

There are also options to give you automatic simplification of variable names to save memory as well as dumping the reformatted listings to back up rather than printer, which, amongst other things, lets you print out several copies

Amsdoc is an incredibly powerful program, I haven't seen anything to compare with it on any other micro, but it is not flawless The main problem is with the manual which, though detailed, (some of it is in the form of a disc file) offers little compromise to the more casually interested. Very experienced programmers should have little problem with it, but if as the manufacturer says, the program is to have educational uses they should avoid leaping into such phrases as "object program", "absolute break" and even "program output medium" where simpler forms are available Nevertheless, for serious Basic programmers, highly recommended

Program *Amsdoc*
Price *£12 95*
Micro *Amstrad*
Supplier *Season*
Developments
12 Falmouth Road
Congleton
Cheshire

This Week

Artist I	Ut	Spectrum 128	£12.95	Softechnics
Tasword 128	Ut	Spectrum 128	£19.95	Tasman Software
Writer	Ut	Spectrum 128	£17.95	Softechnics

Key: **Ad** – adventure **S** – strategy-simulation **Arc** – arcade **Ut** – Utility **Ed** – education

Ariolasoft, Asphalte House, Palace St London W1 **Chalksoft,** 37 Willowsea Road, Worcester WR3 7QP 0905 55192 **Database Software,** Europa House 68 Chester Road, Hazel Grove, Stockport, 061-456 8383 **Digital Research,** Unit 1, Station Road, Hungerford, Berks, 0488 84587 **Elite,** 55 Bradford Street Walsall WS1 3QD 0922 611215 **Global Software,** PO Box 67, London SW11 1BS 01-228 1380 **Gremlin Graphics,** Alpha House, 10 Carver Street, Sheffield S1 4FS 0742 753423 **Metacomco,** 26 Portland Square, Bristol BS2 8RZ, 0272 428781 **Mikro Gen,** The Broadway, Bracknell, Berks, 0344 427317 **Orpheus,** The Smithy Unit 1 Church Farm, Hatley, Beds SG19 3HA **Softechnics, 12/13** Henriette Street Covent Garden London WC2E 8HL 01-240 1422 **Software Projects,** Bearbrand Complex Allerton Road, Woolton, Liverpool **Tasman Software,** Springfield House Hyde Terrace, Leeds LS2 9LN **The Edge,** 31 Maiden Lane Covent Garden London WC2E 8HL 01-240 1422. **US Gold,** Unit 10 The Parkway Ind Centre Heneage Street Birmingham B7 4LY 021 359 3020



Aroma of bias

Was I the only person to feel slightly glummer after reading that recent news article in *Popular Computing Weekly*, January 23?

It celebrated a breezy entrepreneur called Gary Kildall, whose latest achievement is to have put *Grolier's American Encyclopaedia* onto a 12-inch video disc. Each video frame holds a page of text, and the whole ingenious thing allows owners of interactive video disc players to flick to any page, subject or cross-reference at will.

It sounds a large and serious operation – the disc apparently offers 150M of encyclopaedic information. So why do I feel vaguely but decidedly hostile to the enterprise?

Well, I've never much liked encyclopaedias. It's something to do with the way those large glum volumes have pretensions to know everything. The bigger the encyclopaedia, the more smugly it seems to declare, "All human knowledge is within. Look no further. These are the facts."

Whereas the truth is, that if there is any subject that you genuinely know a good deal about, and you look it up in even the grandest and most prestigious encyclopaedia, the odds are massively in favour of your finding the relevant article either biased, incomplete, outdated, or subtly misleading.

Look up a high-technology subject like computing in an encyclopaedia and you'll find a pleasant little nostalgia item, probably full of interesting facts about punched cards. Fair enough? Can any book be more up-to-date than its day of publication? But when you consider the time that it takes for an encyclopaedia to be put together, you'll realise that this section was probably out of date even before the book was published.

Look up any political or literary subject, and you'll probably find some useful hard facts. But don't be surprised if there's also a just-perceptible aroma of bias – probably towards whatever ideas were fashionable orthodoxy a few years ago. I'm not complaining about bias. I enjoy bias, especially when it's flamboyantly declared. Every interesting piece of writing gets its piquancy from the author's point of view. Encyclopaedias, though, pretend that this isn't so. They make claims to objectivity, and disguise their bias as the voice of authority.

And now Mr Kildall has put his encyclopaedia on video disc. A gleaming 12-inch disc, laser readable, and covered with hard transparent laminate.

If you find something you disagree with in a Ram database you can find a way to alter it. If you dislike the tone or judgments of a book, you can at least scribble a rude comment in the margin.

But each tiny flaw lurking in Grolier's encyclopaedia (and I'm sure the flaws aren't too many, and that it's a good product – by encyclopaedia standards) is going to be given new permanency on disc. Because it's a Rom disc, it can't be changed.

If we don't look out, this type of knowledge-dispenser could become a standard fixture of our lives – it sounds so efficient, so easy to use, and so reassuring for those who like their information pre-processed and unchallenged.

Now is the time to insist, not exactly on a government health warning, but at least a flashing message at the top of every page. "NB. This information was collected and presented by human beings. They are reasonably expert in their subjects, but do not know everything. There could well be an error or mis-statement somewhere on this page."

George Simmers

Puzzle No 196

If I were to take a single penny and place it on the table I could place a further six pennies in a ring around it each touching the first. With a further 12 pennies I could arrange a second ring around the first and by continuing in this manner, adding in turn 24, 36, coins and so on, I can construct a regular compact hexagonal figure.

For example, if I had £1.69 (in pennies), I would have my centre penny surrounded by seven outer rings. Curiously these same pennies could also be rearranged to form a square of coins with 13 coins along each edge.

If I now had £327.61, I would be able to make a larger hexagonal pattern with 104 rings or I could rearrange the coins into a square pattern with 181 coins along each edge.

Given unlimited funds, how much would I need before I could next arrange my hexagonal array into a square one?

Solution to Puzzle 191

The pile of pennies contained exactly £901. The problem involves finding a triangular number which is an exact multiple of 100 and is the largest possible without exceeding 100000. Triangular numbers are those in the series 1, 3, 6, 10, 15, etc. That is, those formed from the expression 1+2+3+4+5 . Only numbers that are triangular will form an exact triangular arrangement as described.

```
10 LET T=0
20 LET L=1
30 LET T=T+L
40 IF T/100=INT (T/100) THEN PRINT T,L
50 IF T>100000 THEN STOP
60 LET L=L+1
70 GOTO 30
```

In the program, variable T is the total triangular number, and variable L is the number of coins in each successive line. Each time that the total (T) is an exact multiple of 100 the value is printed out until the value of (T) exceeds 100000.

Winner of Puzzle No 191

The winner is Alan Hodson of Brook Drive, Astley, Manchester, who will be receiving £10.

Rules

The closing date for puzzle 196 is March 19.

The Hackers



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